



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,431	07/11/2003	Wei Zhang	030449	3243

26285 7590 05/25/2005

KIRKPATRICK & LOCKHART NICHOLSON GRAHAM LLP
535 SMITHFIELD STREET
PITTSBURGH, PA 15222

EXAMINER

SHIAO, REI TSANG

ART UNIT PAPER NUMBER

1626

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/617,431

Applicant(s)

ZHANG ET AL.

Examiner

Robert Shiao

Art Unit

1626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on responses filed on 03/23/2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-120 is/are pending in the application.
- 4a) Of the above claim(s) 1-72 and 90-120 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 73-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/04/05, 2/09/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This application claims benefit of the provisional application: 60/395,067 with a filing date 07/11/2002.
2. Claims 1-120 are pending in the application.

Responses to Election/Restriction

3. Applicant's election without traverse of Group VI claims 73-89 in the reply filed on March 23, 2005, is acknowledged. Claims 1-72 and 90-120 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

The requirement is still deemed proper and is therefore made **FINAL**.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 73-89 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter "C₆H_{5-m}" moiety of the formula of claim 73, "fluorous group", "nucleophilic group", "leaving group", or "electrophilic group" without limitation or formula, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention, see claims 73, lines 3-5.

5. Claim 73-89 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the instant fluorous group represents $-C_4F_9$, or C_6H_{5-m} represents phenyl moiety, does not reasonably provide enablement for the instant fluorous group represents a compound other than $-C_4F_9$, i.e., 3-(difluoromethyl)thiophene, or C_6H_{5-m} represents a $-CH=C=C=C=CH-$ moiety (i.e., m is 3). The specification does not enable any person skilled in the art to which it pertains, with which it is most nearly connected, to use the invention commensurate in scope with these claims, see claims 73, lines 3-5.

For rejections under 35 U.S.C. 112, first paragraph, the following factors must be considered (In re Wands, 8 USPQ2d 1400, 1988):

- 1) Nature of invention.
- 2) State of prior art.
- 3) Level of ordinary skill in the art.
- 4) Level of predictability in the art.
- 5) Amount of direction and guidance provided by the inventor.
- 6) Existence of working examples.
- 7) Breadth of claims.
- 8) Quantity of experimentation needed to make or use the invention based on the content of the disclosure.

See below:

1) Nature of the invention

The claims are drawn to a compound of the formula of claim 73 having fluorous group of variable R_f , "nucleophilic group", "leaving group", or "electrophilic

Art Unit: 1626

group" of variable X, or "C₆H_{5-m}" moiety of the formula of claim 73 without limitation.

2) State of the prior art

The reference Curran et al. US 6,156,896 does not indicate which compounds of instant compounds may be useful in the claimed invention. Curran et al. '896 is pertaining to fluorous reaction and separation.

3) Level of ordinary skill in the art.

The level of ordinary skill in the art is high. The claims are drawn to a compound of the formula of claim 73 having fluorous group of variable R_f, nucleophilic group, leaving group, or electrophilic group of variable X, or "C₆H_{5-m}" moiety of the formula of claim 73 without limitation by the instant examples disclosed in the specification.

4) Level of predictability in the art.

The claims are drawn to a compound of the formula of claim 73 having fluorous group of variable R_f, nucleophilic group, leaving group, or electrophilic group of variable X, or "C₆H_{5-m}" moiety of the formula of claim 73 without limitation, there would be little predictability in the scope of claimed methods.

5) Amount of direction and guidance provided by the inventor.

The claims are drawn to a compound of the formula of claim 73 having fluorous group of variable R_f, nucleophilic group, leaving group, or electrophilic group of variable X, or "C₆H_{5-m}" moiety of the formula of claim 73 without limitation, i.e., fluorous group represents 3-(difluoromethyl)thiophene, or C₆H_{5-m} represents a -CH=C=C=C=CH- moiety, which are neither enabled nor supported in the specification.

6) Existence of working examples.

The claims are drawn to a compound of the formula of claim 73 having fluororous group of variable R_f , nucleophilic group, leaving group, or electrophilic group of variable X, or " C_6H_{5-m} " moiety of the formula of claim 73 without limitation, however, the specification provides only limited examples of products.

7) Breadth of claims.

The claims are extremely broad due to the vast number of possible "a compound of the formula of claim 73 having fluororous group of variable R_f , nucleophilic group, leaving group, or electrophilic group of variable X, or " C_6H_{5-m} " moiety of the formula of claim 73 without limitation".

8) Quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The specification did not enable any person skilled in the art to which it pertains to make or use the invention commensurate in scope with this claim. In particular, the specification failed to enable the skilled artisan to practice the invention without undue experimentation. The skilled artisan would have a numerous products in order to obtain "a compound of the formula of claim 73 having fluororous group of variable R_f , nucleophilic group, leaving group, or electrophilic group of variable X, or " C_6H_{5-m} " moiety of the formula of claim 73 without limitation," as claimed. Based on the unpredictable nature of the invention and state of the prior art and the extreme breadth of the claims, one skilled in the art could not perform the claimed compounds without undue experimentation, see *In re Armbruster* 185 USPQ 152 CCPA 1975.

Art Unit: 1626

Incorporation of the limitation "a compound of the formula of claim 73 having fluororous group of variable R_f , nucleophilic group, leaving group, or electrophilic group of variable X without limitation", i.e., halide, $-C_4F_9$, $-C_6F_{13}$, $-[(CF_2)_xO(CF_2)_y]_z$, $-OH$, $-NCZ$, C_6H_{5-m} represents phenyl, etc., would obviate the rejection, see pages 13-14, and claims 75–76.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 73-89 are rejected under 35 U.S.C. 102(a) as being anticipated by

(1) Schwinn et al., publication, Helvetica Chimica Acta, 2002, 85(1): 255-264, also see CAS: 137:32933; (2) Onishi et al. US 6,600,074; or (3) Curran et al. US 6,749,756.

Onishi et al. '074 or Curran et al. '756 is 102 (e) reference.

Applicants claim a compound of the formula of claim 73, and the instant compounds have been found on the page 11-20 of the specification.

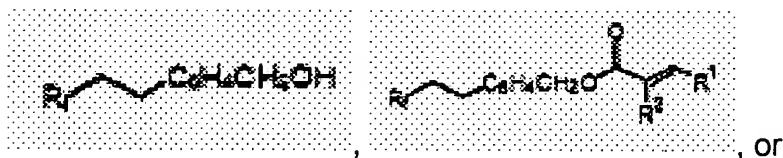
Schwinn et al. disclose a compound No. 12, clearly anticipate the instant compounds of the formula of claim 73, wherein the variable X represent a leaving group or nucleophilic group (i.e., $-O-C=OCl$), the variable R^1 or R^2 independently represents hydrogen; the variable m is 1; the variable p is 1; the variable W represents SiR^6R^7 , and the variable R^6 or R^7 independently represents $-(CH_2)_nR_f$, and n''' is 2, and R_f represents a fluoro group (i.e., $-(CF_2)_5-CF_3$); the variable n is 2; and the variable R_f

Art Unit: 1626

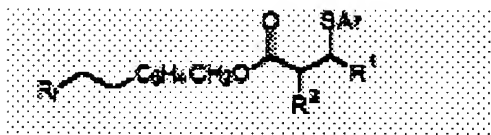
represent a fluoro group (i.e., $-(CF_2)_5-CF_3$), see page 259, line 3, compound No. 12, and page 257, Scheme 3, variable R (i.e., $C_6F_{13}C_2H_4$), also see RN: 436855-64-0 of DN: 137:32933.

Onishi et al. disclose three compounds 2-heptafluoroisopropyl-5-(1-hydroxyethyl)-aniline, 4-heptafluoroisopropyl-3-hydroxymethylaniline, and 4-heptafluoroisopropyl-2-(1-hydroxyethyl)aniline, which clearly anticipate the instant compounds of the formula of claim 73, wherein the variable X represents a nucleophilic group (i.e., -OH), the variable R^1 or R^2 independently represents hydrogen or a linearly alkyl (i.e., methyl), the variable m is 1; the variable p is 1; the variable W represents NR^3 , and R^3 represents hydrogen, the variable n is zero, the variable R_f represent a fluoro group (i.e., C_3F_7), see column 20, lines 14-30.

Curran et al. disclose compounds of three formulae, i.e.,



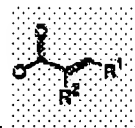
, or

, and variable R_f independently represents C_6F_{13} ,

C_8F_{17} or $C_{10}F_{21}$, variable R^1 and R^2 independently represent hydrogen, methyl, propyl

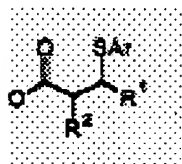
Curran et al. compounds clearly anticipate the instant compounds of the formula of

claim 73, wherein the variable X represents a nucleophilic group (i.e., -OH,



, or

Art Unit: 1626



), the variable R^1 or R^2 independently represents hydrogen, the variable m is 1; the variable p is 0; the variable n is 1, the variable R_f represent a fluoro group (i.e., C_6F_{13} , C_8F_{17} or $C_{10}F_{21}$), see page 4, Figure 2, lines 1-7.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

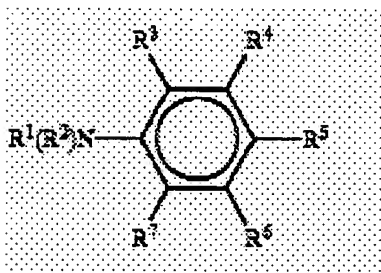
"Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Also see M.P.E.P. 2113.

8. Claims 73-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onishi et al. US 6,600,074. Onishi et al. '074 is 102 (e) reference.

Applicants claim a compound of the formula of claim 73, and the instant compounds have been found on the page 11-20 of the specification.

Determination of the scope and content of the prior art (MPEP §2141.01)

Onishi et al. discloses a compound of formula (I),



, wherein variable R¹ and R² independently represents

Art Unit: 1626

hydrogen or (C₁₋₁₂)alkyl, variables R³, R⁴, R⁵, R⁶, and R⁷ independently represents hydrogen, (C₁₋₁₂)alkyl group, hydroxyl(C₁₋₆)alkyl group, (C₁₋₆)alkylthio group, unsubstituted or substituted amino (C₁₋₆)alkyl group, and at least one of R³, R⁴, R⁵, R⁶, and R⁷ denote a (C₃₋₂₇) perfluoroalkyl group, see columns 26-27, 8, lines 32-42. A number of compounds have been specifically exemplified, see column 20-24.

Determination of the difference between the prior art and the claims (MPEP

§2141.02)

The difference between the instant claims and Onishi et al. is that the instant variable W represents S or NR³, and R³ represent hydrogen, while Onishi et al. represents R¹(R²)N- at the same position, and R¹ and R² independently represent hydrogen.

Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)

One having ordinary skill in the art would find the claims 73-89 prima facie obvious because one would be motivated to employ the compound of Onishi et al. to obtain instant compounds, wherein the variable X represents a nucleophilic group (i.e., -OH), the variable R¹ or R² independently represents hydrogen or a linearly alkyl (i.e., methyl), the variable m is 1; the variable p is 1; the variable W represents NR³, and R³ represents hydrogen, the variable n is zero, the variable R_f represent a fluoro group (i.e., C₃F₇ or n-nonafluorobutyl group).

The motivation to make the claimed compounds derives from the expectation

Art Unit: 1626

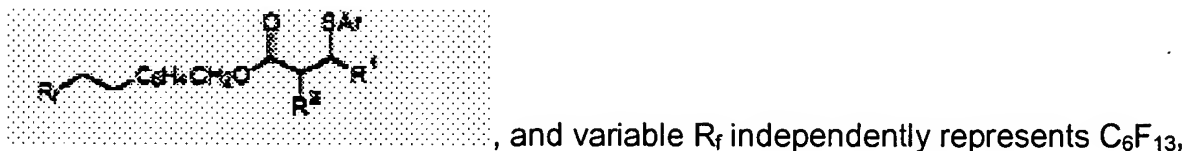
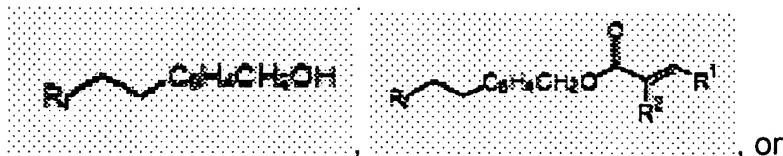
that the instant claimed compounds would possess similar activities, i.e., used for intermediate or reactants for reaction, from the known Onishi et al. compounds to that which is claimed in the reference.

9. Claims 73-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curran et al. US 6,749,756. Curran et al. '756 is 102 (e) reference.

Applicants claim a compound of the formula of claim 73, and the instant compounds have been found on the page 11-20 of the specification.

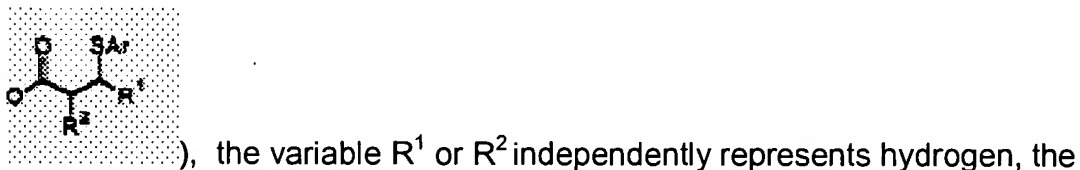
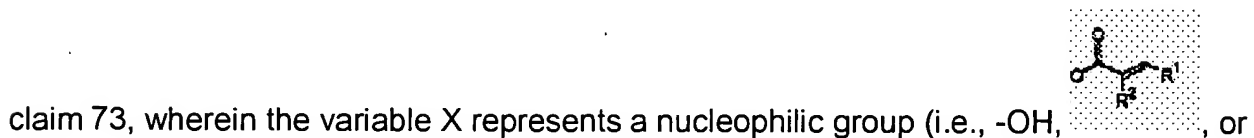
Determination of the scope and content of the prior art (MPEP §2141.01)

Curran et al. disclose compounds of three formulae, i.e.,



C₈F₁₇ or C₁₀F₂₁, variable R¹ and R² independently represent hydrogen, methyl, propyl

Curran et al. compounds clearly anticipate the instant compounds of the formula of



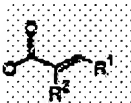
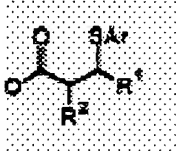
Art Unit: 1626

variable m is 1; the variable p is 0; the variable n is 1, the variable R_f represent a fluoro group (i.e., C_6F_{13} , C_8F_{17} or $C_{10}F_{21}$), see page 4, Figure 2, lines 1-7.

Determination of the difference between the prior art and the claims (MPEP

§2141.02)

The difference between the instant claims and Curran et al. is that the instant variable X represents a nucleophilic group (i.e., -OH, -NH₂), while

Curran et al. represents -OH, , or , at the same position.

Finding of prima facie obviousness-rational and motivation (MPEP §2142-2143)

One having ordinary skill in the art would find the claims 73-89 prima facie obvious because one would be motivated to employ the compound of Curran et al. to obtain instant compounds, wherein the variable X represents a nucleophilic group (i.e., -OH), the variable R^1 or R^2 independently represents hydrogen, the variable m is 1; the variable p is 0; the variable n is 2, the variable R_f represent a fluoro group (i.e., C_6F_{13} , C_8F_{17} or $C_{10}F_{21}$).

The motivation to make the claimed compounds derives from the expectation that the instant claimed compounds would possess similar activities, i.e., used for intermediate or reactants for reaction, from the known Curran et al. compounds to that which is claimed in the reference.

Objection

10. Claim 73, line 7-8, recites the phrase "m, m' and m" are each integers from 1 to 5", is objected. It is noted when the variable m is 5, then the moiety C_6H_{5-m} of the formula in claim 73 is C_6H_0 , which is an objected formula in the chemical art. Incorporation of a correct limitation, i.e., m is 1 for C_6H_{5-m} , would obviate the objection.

Telephone Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Shiao whose telephone number is (571) 272-0707. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph K. McKane can be reached on (571) 272-0699. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

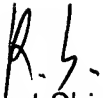
Art Unit: 1626



TAOFIQ SOLOLA
PRIMARY EXAMINER



Joseph K. McKane
Supervisory Patent Examiner
Art Unit 1626



Robert Shiao, Ph.D.
Patent Examiner
Art Unit 1626

May 19, 2005